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* * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

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=> file biosis medline caplus wpids uspatfull
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FILE 'BIOSIS' ENTERED AT 13:01:18 ON 21 JUN 2009
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FILE 'USPATFULL' ENTERED AT 13:01:18 ON 21 JUN 2009
CA INDEXING COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

*** YOU HAVE NEW MAIL ***

=> s sequence and DNA and azide (5a) cycloaddition
L1         147 SEQUENCE AND DNA AND AZIDE (5A) CYCLOADDITION

=> s l1 and dipolar(4a) azide (4a) alkyne
L2          28 L1 AND DIPOLAR(4A) AZIDE (4A) ALKYNE

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3          24 DUP REM L2 (4 DUPLICATES REMOVED)

=> s l3 and self prim?
L4           7 L3 AND SELF PRIM?

=> d l4 bib abs 1-7

L4   ANSWER 1 OF 7  BIOSIS  COPYRIGHT (c) 2009 The Thomson Corporation  on STN
AN   2005:289485  BIOSIS
DN   PREV200510083341
TI   Four-color DNA sequencing by synthesis on a chip using
     photocleavable fluorescent nucleotides.
AU   Seo, Tae Seok; Bai, Xiaopeng; Kim, Dae Hyun; Meng, Qinglin; Shi, Shundi;
     Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue [Reprint
     Author]
CS   Columbia Univ Coll Phys and Surg, Columbia Genome Ctr, Russ Berrie Med Sci
     Pavil,Room 405A, New York, NY 10032 USA
     ju@genomecenter.columbia.edu
SO   Proceedings of the National Academy of Sciences of the United States of
     America, (APR 26 2005) Vol. 102, No. 17, pp. 5926-5931.
     CODEN: PNASA6. ISSN: 0027-8424.
DT   Article
LA   English
ED   Entered STN: 4 Aug 2005
     Last Updated on STN: 4 Aug 2005
AB   We report four-color DNA sequencing by synthesis (SBS) on a
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chip, using four photocleavable fluorescent nucleotide analogues (dGTP-PC-Bodipy-FL-510, dUTP-PC-R6G, dATP-PC-ROX, and dCTP-PC-Bodipy-650) (PC, photocleavable; Bodipy, 4,4-difluoro-4-bora3a,4a-diaza-s-indacene; ROX, 6-carboxy-X-rhodamine; R6G, 6-carboxyrhodamine-6G). Each nucleotide analogue consists of a different fluorophore attached to the 5 position of the pyrimidines and the 7 position of the purines through a photocleavable 2-nitrobenzyl linker. After verifying that these nucleotides could be successfully incorporated into a growing DNA strand in a solution-phase polymerase reaction and the fluorophore could be cleaved using laser irradiation (approximate to 355 nm) in 10 sec, we then performed an SBS reaction on a chip that contains a self-priming DNA template covalently immobilized by using 1,3-dipolar azide-alkyne cycloaddition. The DNA template was produced by PCR, using an azido-labeled primer, and the self-priming moiety was attached to the immobilized DNA template by enzymatic ligation. Each cycle of SBS consists of the incorporation of the photocleavable fluorescent nucleotide into the DNA, detection of the fluorescent signal, and photocleavage of the fluorophore. The entire process was repeated to identify 12 continuous bases in the DNA template. These results demonstrate that photocleavable fluorescent nucleotide analogues can be incorporated accurately into a growing DNA strand during a polymerase reaction in solution and on a chip. Moreover, all four fluorophores can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing continuous identification of the DNA template sequence. Optimization of the steps involved in this SBS approach will further increase the read-length.

L4 ANSWER 2 OF 7 BIOSIS COPYRIGHT (c) 2009 The Thomson Corporation on STN
AN 2004:274066 BIOSIS
DN PREV200400274356
TI Photocleavable fluorescent nucleotides for DNA sequencing on a chip constructed by site-specific coupling chemistry.
AU Seo, Tae k; Bai, Xiaopeng; Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J. [Reprint Author]; Ju, Jingyue
CS Columbia Genome Ctr, Columbia Univ Coll Phys & Surg, Russ Berrie Med Sci Pavil,Room 405A, New York, NY, 10032, USA
njt3@columbia.edu; ju@cu-genome.org
SO Proceedings of the National Academy of Sciences of the United States of America, (April 13 2004) Vol. 101, No. 15, pp. 5488-5493. print.
ISSN: 0027-8424 (ISSN print).
DT Article
LA English
ED Entered STN: 2 Jun 2004
Last Updated on STN: 2 Jun 2004
AB DNA sequencing by synthesis on a solid surface offers new paradigms to overcome limitations of electrophoresis-based sequencing methods. Here we report DNA sequencing by synthesis using photocleavable (PC) fluorescent nucleotides (dUTP-PC-4,4-difluoro-4-bora-3alpha,4alpha-diaza-s-indacene (Bodipy)-FL-510, dCTP-PC-Bodipy-650, and dUTP-PC-6-carboxy-X-rhodamine (ROX)) on a glass chip constructed by 1,3-dipolar azide -alkyne cycloaddition coupling chemistry. Each nucleotide analogue consists of a different fluorophore attached to the base through a PC 2-nitrobenzyl linker. We constructed a DNA microarray by using the 1,3-dipolar cycloaddition chemistry to site-specifically attach azido-modified DNA onto an alkyne-functionalized glass chip at room temperature under aqueous conditions. After verifying that the polymerase reaction could be carried out successfully on the above-described DNA array, we then

performed a sequencing reaction on the chip by using a self-primed DNA template. In the first step, we extended the primer using DNA polymerase and dUTP-PC-Bodipy-FL-510, detected the fluorescent signal from the fluorophore Bodipy-FL-510, and then cleaved the fluorophore using 340 nm UV irradiation. This process was followed by extension of the primer with dCTP-PC-Bodipy-650 and the subsequent detection of the fluorescent signal from Bodipy-650 and its photocleavage. The same procedure was also performed by using dUTP-PC-ROX. The entire process was repeated five times by using the three fluorescent nucleotides to identify 7 bases in the DNA template. These results demonstrate that the PC nucleotide analogues can be incorporated accurately into a growing DNA strand during polymerase reaction on a chip, and the fluorophore can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing the continuous identification of the template sequence.

L4 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:1001865 CAPLUS
DN 143:300254
TI Photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddition chemistry
IN Ju, Jingyue
PA The Trustees of Columbia University In the City of New York, USA
SO PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005084367	A2	20050915	WO 2005-US6960	20050303
	WO 2005084367	A3	20051222		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CA 2557818	A1	20050915	CA 2005-2557818	20050303
	EP 1730307	A2	20061213	EP 2005-724495	20050303
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, LV, MK, YU				
	US 20070275387	A1	20071129	US 2007-591520	20070604
PRAI	US 2004-550007P	P	20040303		
	WO 2005-US6960	W	20050303		

AB This invention provides a method for determining the sequence of a DNA or an RNA, wherein (i) about 1000 or fewer copies of the DNA or RNA are bound to a solid substrate via 1,3-dipolar azide-alkyne cycloaddn. chemical and (ii) each copy of the DNA or RNA comprises a self-priming moiety.
The bound nucleic acid is contacted with a DNA or RNA polymerase and 4 photocleavable fluorescent nucleotide analogs under conditions permitting nucleic acid synthesis. The identity of the incorporated nucleotide is determined, each of the nucleotide analogs having a different

fluorescent wavelength from the other three.
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 7 WPIDS COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2008-H57084 [48] WPIDS
DNC C2008-237532 [48]
TI Determining DNA sequence comprises contacting the DNA with a DNA polymerase in the presence of a primer and four labeled nucleotide analogs and removing unbound reversible terminators
DC A89; B04; D16
IN BI L; JU J; KIM D H; LI X; MENG Q
PA (UYCO-C) UNIV COLUMBIA NEW YORK
CYC 120
PIA WO 2008069973 A2 20080612 (200848)* EN 96[11]
WO 2008069973 A3 20081211 (200901) EN
ADT WO 2008069973 A2 WO 2007-US24646 20071130
PRAI US 2006-872240P 20061201
AN 2008-H57084 [48] WPIDS
AB WO 2008069973 A2 UPAB: 20080729
NOVELTY - Determining the sequence of a DNA comprises performing the following steps for each residue of the DNA to be sequenced contacting the DNA with a DNA polymerase in the presence of (i) a primer and (ii) four nucleotide analogs under conditions permitting the DNA polymerase to catalyze DNA synthesis, and removing unbound reversible terminators.

DETAILED DESCRIPTION - Determining the sequence of a DNA comprises, performing the following steps for each residue of the DNA to be sequenced,:

(A) contacting the DNA with a DNA polymerase in the presence of (i) a primer and (ii) four nucleotide analogs under conditions permitting the DNA polymerase to catalyze DNA synthesis, where (1) the nucleotide analogs consist of an analog of dGTP, an analog of dCTP, an analog of dTTP or dUTP, and an analog of dATP, (2) each nucleotide analog comprises (i) a base selected from adenine, guanine, cytosine, thymine or uracil, or their analogs, (ii) a deoxyribose, (iii) a moiety cleavably linked to the 3'-oxygen of the deoxyribose and (iv) a unique label cleavably linked to the base, so that a nucleotide analog complementary to the residue being sequenced is incorporated into the DNA by the DNA polymerase, and (3) each of the four analogs has a unique label which is different than the unique labels of the other three analogs;

(B) removing unbound nucleotide analogs;

(C) again contacting the DNA with a DNA polymerase in the presence of (i) a primer and (ii) four reversible terminators under conditions permitting the DNA polymerase to catalyze DNA synthesis, where (1) the reversible terminators consist of an analog of dGTP, an analog of dCTP, an analog of dTTP or dUTP, and an analog of dATP, (2) each nucleotide analog comprises (i) a base selected from adenine, guanine, cytosine, thymine or uracil, or their analogs, which base does not have a unique label bound thereto, (ii) a deoxyribose, and (iii) a moiety cleavably linked to the 3'-oxygen of the deoxyribose;

(D) removing unbound reversible terminators;

(E) determining the identity of the nucleotide analog incorporated in step (a) via determining the identity of the corresponding unique label, where step (e) can either precede step (c) or follow step (d); and

(F) following step (e), except with respect to the final DNA residue to be sequenced, cleaving from the incorporated nucleotide analogs the unique label, if applicable, and the moiety linked

to the 3'-oxygen atom of the deoxyribose, thus determining the sequence of the DNA.

An INDEPENDENT CLAIM is a kit, for performing the method above, comprising, in separate compartments, (a) nucleotide analogs of (i) GTP, (ii) ATP, (iii) CTP and (iv) TTP or UTP, where each analog comprises (i) a base selected from adenine, guanine, cytosine, thymine or uracil, or its analog, (ii) a deoxyribose, (iii) a cleavable moiety bound to the 3'-oxygen of the deoxyribose and (iv) a unique label bound to the base via a cleavable linker, (b) reversible terminators comprising a nucleotide analog of (i) GTP, (ii) ATP, (iii) CTP and (iv) TTP or UTP, where each analog comprises (i) a base selected from adenine, guanine, cytosine, thymine or uracil, or its analog, which base does not have a unique label bound thereto, (ii) a deoxyribose, and (iii) a cleavable moiety bound to the 3'-oxygen of the deoxyribose, (c) reagents for use in DNA polymerization, and (d) instructions for use.

USE - The method and kit are useful for determining the sequence of a DNA (claimed).

ADVANTAGE - The present invention provides simple method to directly detect a reporter group attached to the nucleotide that is incorporated into a growing DNA strand in the polymerase reaction rather than relying on a complex enzymatic cascade. The SBS scheme based on fluorescence detection coupled with a chip format has the potential to markedly increase the throughput of DNA sequencing projects.

L4 ANSWER 5 OF 7 WPIDS COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2007-482270 [47] WPIDS
DNC C2007-176425 [47]
DNN N2007-366760 [47]
TI Preparation of four colour 3'-O-allyl modified photocleavable fluorescent nucleotides used for DNA sequencing includes allylating 2-amino-7-(beta-D-5'-O-(tert-butyldimethylsilyl)-2'-deoxyribofuranosyl)-5-iodo-4-methoxypyrrolopyrimidine
DC B04; D16; S03; T01
IN BI L; JU J; KIM D H; MENG Q; TURRO N J; BAI X
PA (UYCO-C) UNIV COLUMBIA NEW YORK
CYC 116
PIA WO 2007053702 A2 20070510 (200747)* EN 112[22]
WO 2007053702 A8 20071004 (200765) EN
WO 2007053702 A3 20080124 (200810) EN
GB 2446084 A 20080730 (200852) EN
ADT WO 2007053702 A2 WO 2006-US42698 20061031; GB 2446084 A WO 2006-US42698 20061031; GB 2446084 A GB 2008-8034 20080502
FDT GB 2446084 A Based on WO 2007053702 A
PRAI US 2005-732373P 20051031
AN 2007-482270 [47] WPIDS
AB WO 2007053702 A2 UPAB: 20070724
NOVELTY - Preparation of 3'-O-allyl-d-guanine triphosphate-photocleavable-bodipy-fluorophore-510 includes allylating 3'-hydroxyl of 2-amino-7-(beta-D-5'-O-(tert-butyldimethylsilyl)-2'-deoxyribofuranosyl)-5-iodo-4-methoxypyrrolo (2,3-d)pyrimidine in methylene chloride and 40% aqueous sodium hydroxide solution using tetrabutylammonium bromide, cross-coupling with terminal alkyne catalyzed by palladium/copper, demethylating and desilylating, transforming into corresponding triphosphate, and coupling with photocleavable-bodipy-fluorophore-510 NHS ester.

DETAILED DESCRIPTION - Preparation of 3'-O-allyl-d-guanine triphosphate-photocleavable-bodipy-fluorophore-510 (3'-O-allyl-dGTP-PC-bodipy-FL-510) includes:

(A) protecting 2-amino-4-methoxy-7-(beta-D-2-deoxyribofuranosyl)pyrrolo(2,3-d)-pyrimidine (I) by isobutyryl chloride to

form a compound of formula (II);

(B) iodinizing compound (II) with anhydrous N-iodosuccinimide (NIS) to afford a single iodo product of formula (III);

(C) deprotecting compound (III) by sodium methoxide to obtain a compound of formula (IV);

(D) protecting 5'-OH of compound (IV) by tert-butyldimethylsilyl chloride to yield a compound of formula (V);

(E) subsequently allylating 3'-OH of compound (V) in methylene chloride and 40% aqueous sodium hydroxide solution using tetrabutylammonium bromide as phase-transfer catalyst to give a compound of formula (VI) without 2-N-allylated product;

(F) cross-coupling compound (VI) with the terminal alkyne catalyzed by palladium/copper to obtain compound of formula (VII);

(G) demethylating and desilylating compound (VII) to give a compound of formula (VIII);

(H) transforming compound (VIII) into corresponding triphosphate of formula (IX); and coupling compound (IX) with photocleavable-bodipy-fluorophore-510 NHS ester.

INDEPENDENT CLAIMS are included for:

(1) preparation of 3'-O-allyl-dATP-photocleavable-ROX, 3'-O-allyl-d-cytosine triphosphate-photocleavable-bodipy-650, and 3'-Q-allyl-d-uracil triphosphate-photocleavable-R6G;

(2) determination of DNA sequence by reacting DNA with a DNA polymerase in the presence of a primer and four fluorescent nucleotide analogs under conditions permitting the DNA polymerase to catalyze DNA synthesis, where the nucleotide analogs comprise d-guanine triphosphate (dGTP), d-cytosine triphosphate (dCTP), d-thymine triphosphate (dTTP), or d-uracil triphosphate (dUTP) analog and dATP analog, each analog comprises a base (e.g. adenine, guanine, cytosine, thymine, or uracil), a deoxyribose, a fluorophore photocleavably attached to the base, and an allyl moiety bound to the 3'-oxygen of deoxyribose so that nucleotide analog complementary to the residue being sequenced is bound to the DNA by the DNA polymerase, and each analog has a predetermined fluorescence wavelength which is different than the fluorescence wavelengths of the other three analogs; removing unbound nucleotide analogs; determining the identity of the bound nucleotide analogs; and following determining step except with respect to the final DNA residue to be sequenced, chemically cleaving the allyl moiety bound to the 3'-oxygen atom of deoxyribose from the bound nucleotide analog using palladium catalyst at a pH of 8.8, and photocleaving the fluorophore from the bound nucleotide analog; and

(3) removal of allyl group from 3'-oxygen of nucleotide analog's deoxyribose moiety by reacting nucleotide analog with a palladium catalyst (e.g. sodium palladium tetrachloride) at pH of 8.8.

USE - Used for preparing 3'-O-allyl-dGTP-PC-bodipy-FL-510 useful as reversible terminator for DNA sequencing by synthesis.

ADVANTAGE - 3'-O-allyl-dGTP-PC-bodipy-FL-510 can incorporate into growing DNA strand in a polymerase reaction, and the fluorophore can be efficiently cleaved by near UV irradiation, making it feasible for SBS on a chip.

L4 ANSWER 6 OF 7 WPIDS COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2007-434491 [41] WPIDS
DNC C2007-157641 [41]
TI New nucleotide analogue comprises a base, a deoxyribose, an allyl moiety bound to the 3'-oxygen of the deoxyribose or a fluorophore bound to the base, useful in determining the sequence of a DNA
DC B04; D16
IN BI L; JU J; KIM D H; MENG Q
PA (UYCO-C) UNIV COLUMBIA NEW YORK

CYC 116
PIA WO 2007053719 A2 20070510 (200741)* EN 52[7]
GB 2446083 A 20080730 (200852) EN
WO 2007053719 A3 20090423 (200929) EN
ADT WO 2007053719 A2 WO 2006-US42739 20061031; GB 2446083 A WO 2006-US42739 20061031; GB 2446083 A GB 2008-8033 20080502; WO 2007053719 A3 WO 2006-US42739 20061031
FDT GB 2446083 A Based on WO 2007053719 A
PRAI US 2005-732040P 20051031
US 2005-732040P 20051031
AN 2007-434491 [41] WPIDS
AB WO 2007053719 A2 UPAB: 20090509
NOVELTY - A nucleotide analog comprises:
(i) a base consisting of adenine, guanine, cytosine, thymine or uracil or its analog;
(ii) a deoxyribose;
(iii) an allyl moiety bound to the 3'-oxygen of the deoxyribose; and
(iv) a fluorophore bound to the base via an allyl linker.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are:
(1) a method for making the nucleotide analog;
(2) a method for determining the sequence of a DNA;
(3) a kit for performing the method of determining the sequence of a DNA, comprising, in separate compartments, (a) a nucleotide analog of (i) GTP, (ii) ATP, (iii) CTP and (iv) TTP or UTP, where each analogue comprises (i) a base consisting of adenine, guanine, cytosine, thymine or uracil or its analogue, (ii) a deoxyribose, (iii) an allyl moiety bound to the 3'-oxygen of the deoxyribose and (iv) a fluorophore bound to the base via an allyl linker, (b) reagents suitable for use in DNA polymerization; and (c) instructions for use; and
(4) methods for covalently affixing a detectable moiety, via an allyl linker, to an NH2-bearing molecule.
USE - The nucleotide analogue is useful in determining the sequence of a DNA.

L4 ANSWER 7 OF 7 USPATFULL on STN
AN 2007:315184 USPATFULL
TI Photocleavable Fluorescent Nucleotides for Dna Sequencing on Chip Constructed by Site-Specific Coupling Chemistry
IN Ju, Jingyue, Englewood Cliffs, NJ, UNITED STATES
PA TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK, THE, NEW YORK, NY, UNITED STATES, 10027 (U.S. corporation)
PI US 20070275387 A1 20071129
AI US 2005-591520 A1 20050303 (10)
WO 2005-US6960 20050303
20070604 PCT 371 date
PRAI US 2004-550007P 20040303 (60)
DT Utility
FS APPLICATION
LREP COOPER & DUNHAM, LLP, 1185 AVENUE OF THE AMERICAS, NEW YORK, NY, 10036, US
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 7 Drawing Page(s)
LN.CNT 857
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides a method for determining the sequence of a DNA or an RNA, wherein (i) about 1000 or fewer copies of the DNA or RNA are bound to a solid substrate via 1,3-dipolar azide-alkyne cycloaddition chemistry and (ii) each copy of the DNA or RNA comprises a

self-priming moiety.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d his

(FILE 'HOME' ENTERED AT 13:00:25 ON 21 JUN 2009)

FILE 'BIOSIS, MEDLINE, CAPLUS, WPIDS, USPATFULL' ENTERED AT 13:01:18 ON 21 JUN 2009
L1 147 S SEQUENCE AND DNA AND AZIDE (5A) CYCLOADDITION
L2 28 S L1 AND DIPOLAR(4A) AZIDE (4A) ALKYNE
L3 24 DUP REM L2 (4 DUPLICATES REMOVED)
L4 7 S L3 AND SELF PRIM?

=> file reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	108.98	109.42

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-0.82	-0.82

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DICTIONARY FILE UPDATES: 19 JUN 2009 HIGHEST RN 1159249-84-9

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L5 STRUCTURE UPLOADED

=> d l5
L5 HAS NO ANSWERS
L5 STR

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

Structure attributes must be viewed using STN Express query preparation.

=> s l5 full
FULL SEARCH INITIATED 13:22:41 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 34 TO ITERATE

100.0% PROCESSED 34 ITERATIONS 2 ANSWERS
SEARCH TIME: 00.00.01

L6 2 SEA SSS FUL L5

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	185.88	295.30

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-0.82

FILE 'CAPLUS' ENTERED AT 13:22:52 ON 21 JUN 2009
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FILE COVERS 1907 - 21 Jun 2009 VOL 150 ISS 26
FILE LAST UPDATED: 19 Jun 2009 (20090619/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Feb 2009

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reclassification data for the third quarter of 2008.

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substance identification.

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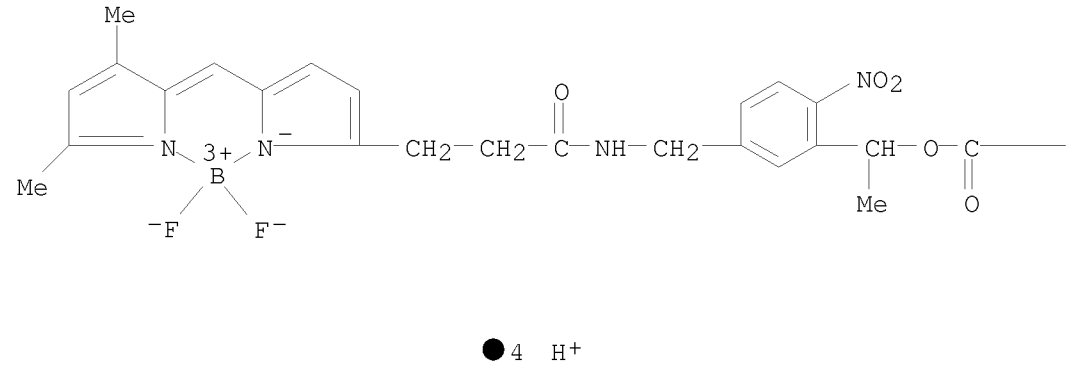
=> s l6
L7 4 L6

=> dup rem l7
PROCESSING COMPLETED FOR L7
L8 4 DUP REM L7 (0 DUPLICATES REMOVED)

=> d l8 bib abs hitstr 1-4

L8 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2008:291881 CAPLUS
DN 149:1872
TI An integrated system for DNA sequencing by synthesis
AU Edwards, John R.; Kim, Dae Hyun; Ju, Jingyue
CS Columbia Genome Center, Russ Berrie Medical Science Pavilion, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Perspectives in Bioanalysis (2007), 2(New High Throughput Technologies for DNA Sequencing and Genomics), 187-205
CODEN: PBEIBF; ISSN: 1871-0069
PB Elsevier B.V.
DT Journal; General Review
LA English
AB A review. The completion of the Human Genome Project has increased the need for high-throughput DNA sequencing technologies aimed at uncovering the genomic contributions to diseases. The DNA sequencing by synthesis (SBS) approach has shown great promise as a new platform for deciphering the genome. Recently, much progress has been made on the fundamental sciences required to make SBS a viable sequencing technol. One of the unique features of this approach is that many of the steps required are compatible in a modular fashion allowing for the best solution at each stage to be effectively integrated. Recent advances include emulsion-PCR based DNA template preparation, the design and synthesis of novel reporter nucleotides and new surface attachment chemistries for DNA template. The integration of these advances will lead to the development of a high-throughput DNA sequencing system in the near future.
IT 857288-06-3
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(integrated system for DNA sequencing by synthesis)
RN 857288-06-3 CAPLUS
CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[2-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



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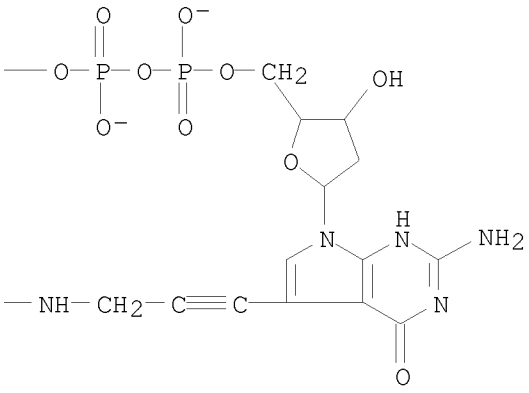


RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2006:277410 CAPLUS
DN 144:481827
TI Design and synthesis of a photocleavable fluorescent nucleotide 3'-O-allyl-dGTP-PC-Bodipy-FL-510 as a reversible terminator for DNA sequencing by synthesis
AU Meng, Qinglin; Kim, Dae Hyun; Bai, Xiaopeng; Bi, Lanrong; Turro, Nicholas J.; Ju, Jingyue
CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Journal of Organic Chemistry (2006), 71(8), 3248-3252
CODEN: JOCEAH; ISSN: 0022-3263
PB American Chemical Society
DT Journal
LA English
OS CASREACT 144:481827

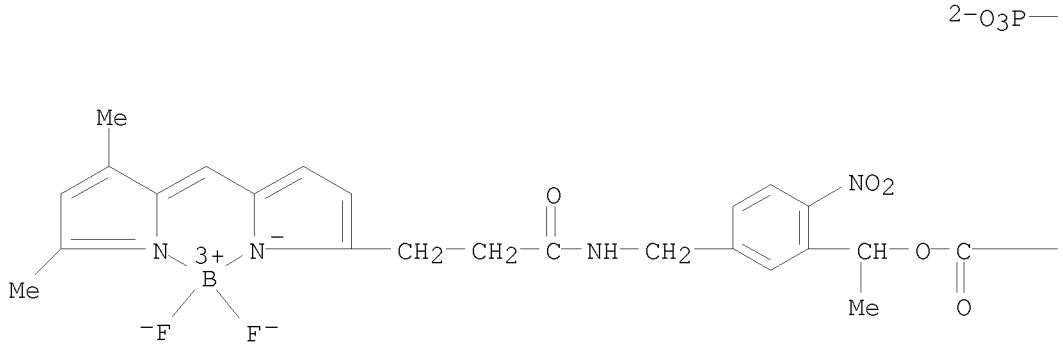
AB DNA sequencing by synthesis (SBS) using reversible fluorescent nucleotide terminators is potentially an efficient approach to address the limitations of current DNA sequencing techniques. Here, we report the design and synthesis of a 3'-O-allyl photocleavable fluorescent nucleotide analog, 3'-O-allyl-dGTP-PC-Bodipy-FL-510, as a reversible terminator for SBS. The nucleotide is efficiently incorporated by DNA polymerase into a growing DNA strand to terminate the polymerase reaction. After that, the fluorophore is photocleaved quant. by irradiation at 355 nm, and the allyl group is rapidly and efficiently removed by using a Pd-catalyzed reaction under DNA-compatible conditions to regenerate a free 3'-OH group to reinitiate the polymerase reaction. Two cycles of such steps were successfully demonstrated to sequence a homopolymeric region of a DNA template, facilitating the development of SBS as a viable approach for high-throughput DNA sequencing.

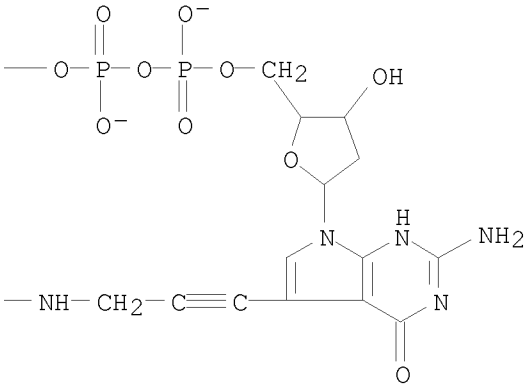
IT 857288-06-3P
RL: BUU (Biological use, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(design and synthesis of photocleavable fluorescent nucleotide 3'-O-allyl-dGTP-PC-Bodipy-FL-510 as reversible terminator for DNA sequencing by synthesis)

RN 857288-06-3 CAPLUS

CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[2-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A





RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:1001865 CAPLUS
DN 143:300254
TI Photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddition chemistry
IN Ju, Jingyue
PA The Trustees of Columbia University In the City of New York, USA
SO PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005084367	A2	20050915	WO 2005-US6960	20050303
	WO 2005084367	A3	20051222		
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	US 20070275387	A1	20071129	US 2007-591520	20070604
PRAI	US 2004-550007P	P	20040303		
	WO 2005-US6960	W	20050303		

AB This invention provides a method for determining the sequence of a DNA or an RNA, wherein (i) about 1000 or fewer copies of the DNA or RNA are bound to a solid substrate via 1,3-dipolar azide-alkyne cycloaddn. chemical and (ii) each copy of the DNA or RNA comprises a self-priming moiety. The bound nucleic acid is contacted with a DNA or RNA polymerase and 4 photocleavable fluorescent nucleotide analogs under conditions permitting

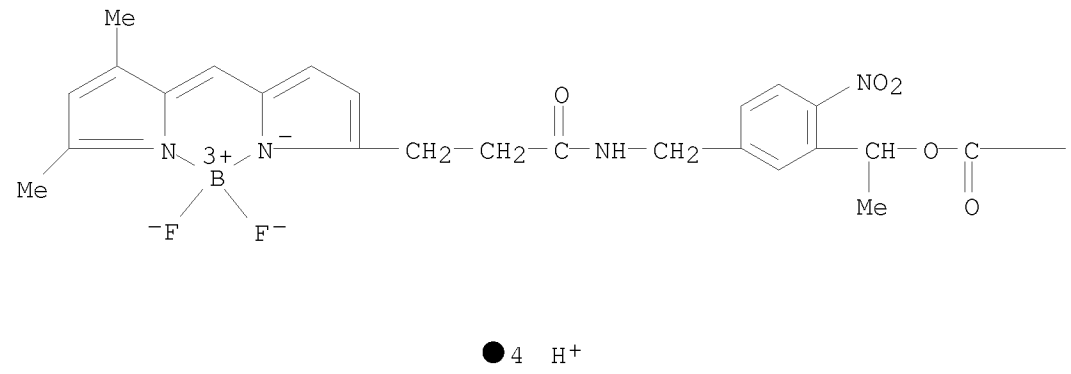
nucleic acid synthesis. The identity of the incorporated nucleotide is determined, each of the nucleotide analogs having a different fluorescent wavelength from the other three.

IT 857288-06-3
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddn. chemical)

RN 857288-06-3 CAPLUS

CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[2-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

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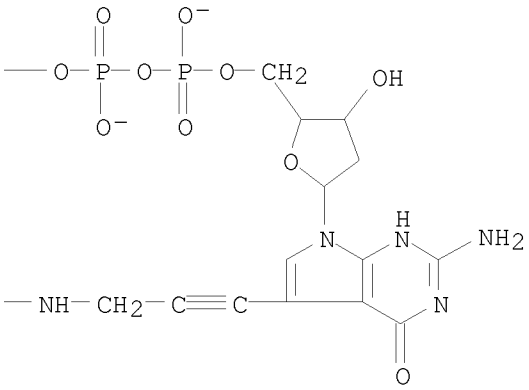
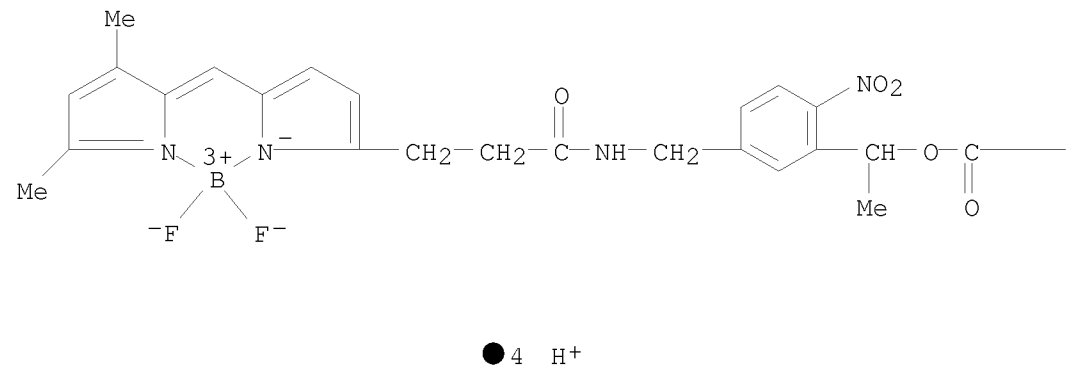


RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:424578 CAPLUS
DN 143:110290
TI Four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides
AU Seo, Tae Seok; Bai, Xiaopeng; Kim, Dae Hyun; Meng, Qinglin; Shi, Shundi; Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue
CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Proceedings of the National Academy of Sciences of the United States of America (2005), 102(17), 5926-5931
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English
AB We report four-color DNA sequencing by synthesis (SBS) on a chip, using four photocleavable fluorescent nucleotide analogs (dGTP-PC-Bodipy-FL-510, dUTP-PC-R6G, dATP-PC-ROX, and dCTP-PC-Bodipy-650) (PC, photocleavable; Bodipy, 4,4-difluoro-4-bora-3α,4α-diaza-s-indacene; ROX, 6-carboxy-X-rhodamine; R6G, 6-carboxyrhodamine-6G). Each nucleotide analog consists of a different fluorophore attached to the 5 position of the pyrimidines and the 7 position of the purines through a photocleavable 2-nitrobenzyl linker. After verifying that these nucleotides could be successfully incorporated into a growing DNA strand in a solution-phase polymerase reaction and the fluorophore could be cleaved using laser irradiation (≈355 nm) in 10 s, we then performed an SBS reaction on a chip that contains a self-priming DNA template covalently immobilized by using 1,3-dipolar azide-alkyne cycloaddn. The DNA template was produced by PCR, using an azido-labeled primer, and the self-priming moiety was attached to the immobilized DNA template by enzymic ligation. Each cycle of SBS consists of the incorporation of the photocleavable fluorescent nucleotide into the DNA, detection of the fluorescent signal, and photocleavage of the fluorophore. The entire process was repeated to identify 12 continuous bases in the DNA template. These results demonstrate that photocleavable fluorescent nucleotide analogs can be incorporated accurately into a growing DNA strand during a polymerase reaction in solution and on a chip. Moreover, all four fluorophores can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing continuous identification of the DNA template sequence. Optimization of the steps involved in this SBS approach will further increase the read-length.
IT 857288-06-3
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(dGTP-PC-Bodipy-FL-510; four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides)
RN 857288-06-3 CAPLUS
CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[2-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



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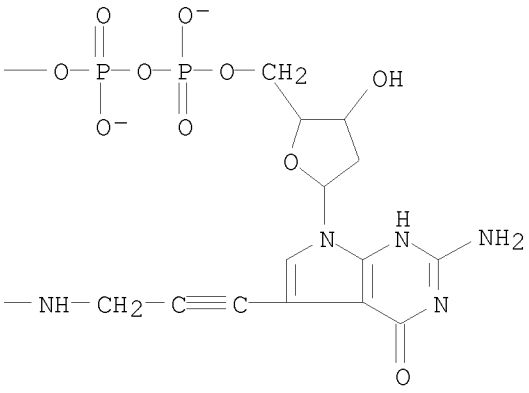

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

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Property values tagged with IC are from the ZIC/VINITI data file

provided by InfoChem.

STRUCTURE FILE UPDATES: 19 JUN 2009 HIGHEST RN 1159249-84-9
DICTIONARY FILE UPDATES: 19 JUN 2009 HIGHEST RN 1159249-84-9

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  conducting SmartSELECT searches.

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predicted properties as well as tags indicating availability of
experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

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L9   STR

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

Structure attributes must be viewed using STN Express query preparation.

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FULL SCREEN SEARCH COMPLETED -   57 TO ITERATE

100.0% PROCESSED   57 ITERATIONS   1 ANSWERS
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FULL ESTIMATED COST   185.88   505.74

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)   SINCE FILE   TOTAL
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FILE 'CAPLUS' ENTERED AT 13:25:45 ON 21 JUN 2009
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FILE COVERS 1907 - 21 Jun 2009 VOL 150 ISS 26
FILE LAST UPDATED: 19 Jun 2009 (20090619/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Feb 2009

CAplus now includes complete International Patent Classification (IPC)
reclassification data for the third quarter of 2008.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

*** YOU HAVE NEW MAIL ***

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L11 3 L10

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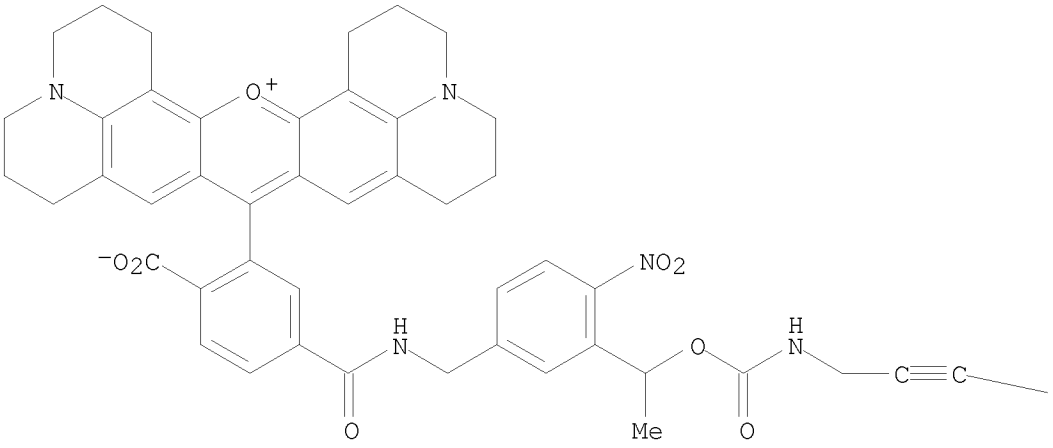
L11 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2008:291881 CAPLUS
DN 149:1872
TI An integrated system for DNA sequencing by synthesis
AU Edwards, John R.; Kim, Dae Hyun; Ju, Jingyue
CS Columbia Genome Center, Russ Berrie Medical Science Pavilion, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Perspectives in Bioanalysis (2007), 2(New High Throughput Technologies for DNA Sequencing and Genomics), 187-205
CODEN: PBEIBF; ISSN: 1871-0069
PB Elsevier B.V.
DT Journal; General Review
LA English
AB A review. The completion of the Human Genome Project has increased the need for high-throughput DNA sequencing technologies aimed at uncovering the genomic contributions to diseases. The DNA sequencing by synthesis (SBS) approach has shown great promise as a new platform for deciphering the genome. Recently, much progress has been made on the fundamental sciences required to make SBS a viable sequencing technol. One of the unique features of this approach is that many of the steps required are compatible in a modular fashion allowing for the best solution at each stage to be effectively integrated. Recent advances include emulsion-PCR based DNA template preparation, the design and synthesis of novel reporter nucleotides and new surface attachment chemistries for DNA template. The integration of these advances will lead to the development of a high-throughput DNA sequencing system in the near future.
IT 857285-10-0
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(integrated system for DNA sequencing by synthesis)
RN 857285-10-0 CAPLUS
CN 1H,5H,11H,15H-Xantheno[2,3,4-ij:5,6,7-i'j']diquinolizin-18-ium, 9-[5-[[[[3-[1-[[[[3-[4-amino-7-[2-deoxy-5-O-

[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-7H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]-2-carboxyphenyl]-2,3,6,7,12,13,16,17-octahydro-, inner salt (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



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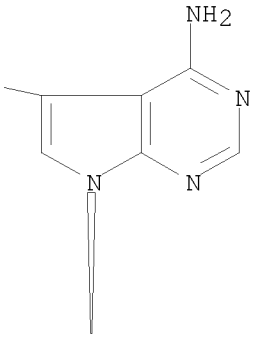

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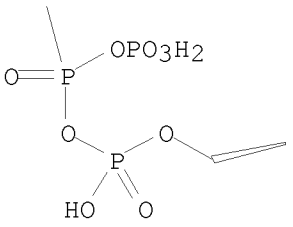

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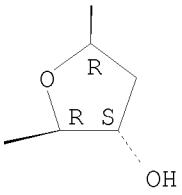

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:1001865 CAPLUS
DN 143:300254
TI Photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddition chemistry
IN Ju, Jingyue
PA The Trustees of Columbia University In the City of New York, USA
SO PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005084367	A2	20050915	WO 2005-US6960	20050303
	WO 2005084367	A3	20051222		
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	EP 1730307	A2	20061213	EP 2005-724495	20050303
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	US 20070275387	A1	20071129	US 2007-591520	20070604

PRAI US 2004-550007P P 20040303
WO 2005-US6960 W 20050303

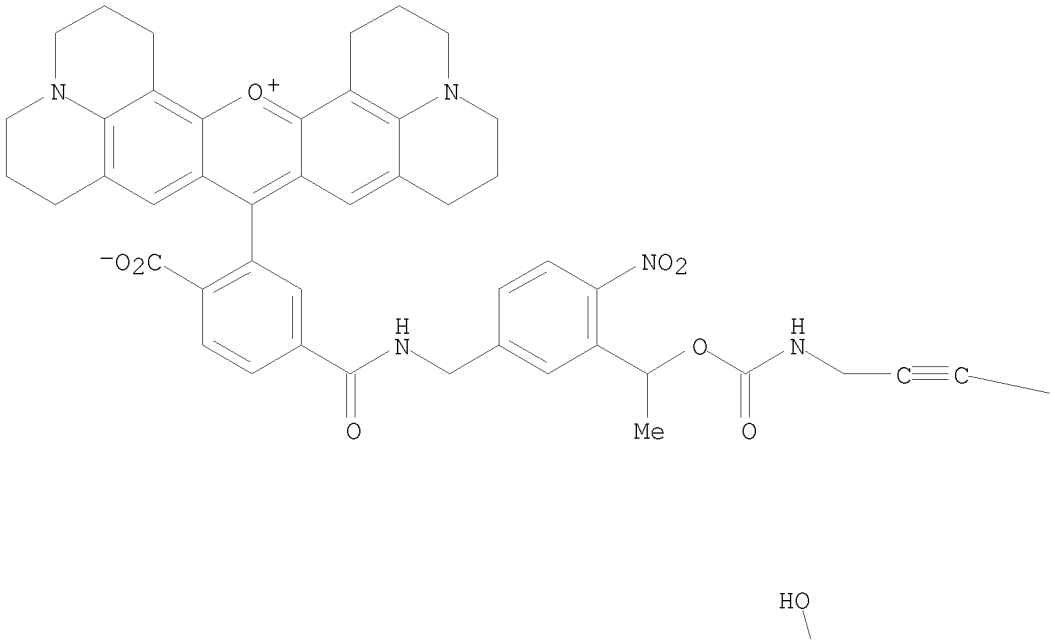
AB This invention provides a method for determining the sequence of a DNA or an RNA, wherein (i) about 1000 or fewer copies of the DNA or RNA are bound to a solid substrate via 1,3-dipolar azide-alkyne cycloaddn. chemical and (ii) each copy of the DNA or RNA comprises a self-priming moiety. The bound nucleic acid is contacted with a DNA or RNA polymerase and 4 photocleavable fluorescent nucleotide analogs under conditions permitting nucleic acid synthesis. The identity of the incorporated nucleotide is determined, each of the nucleotide analogs having a different fluorescent wavelength from the other three.

IT 857285-10-0
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddn. chemical)

RN 857285-10-0 CAPLUS

CN 1H,5H,11H,15H-Xantheno[2,3,4-ij:5,6,7-i'j']diquinolizin-18-ium, 9-[5-[[[[3-[1-[[[[3-[4-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-7H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]-2-carboxyphenyl]-2,3,6,7,12,13,16,17-octahydro-, inner salt (9CI) (CA INDEX NAME)

Absolute stereochemistry.



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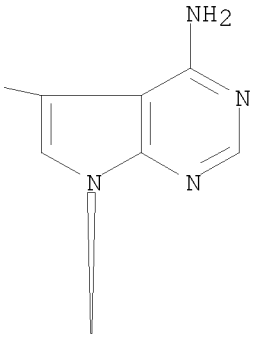

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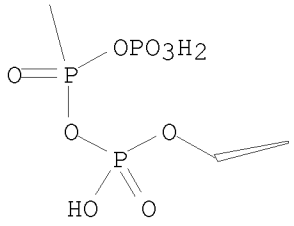

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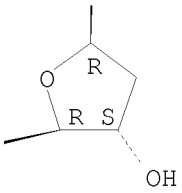


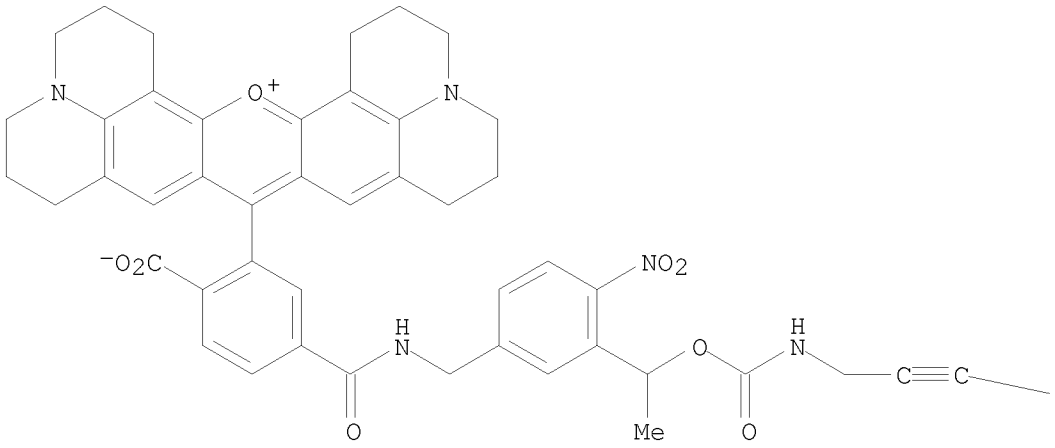
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:424578 CAPLUS
DN 143:110290
TI Four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides
AU Seo, Tae Seok; Bai, Xiaopeng; Kim, Dae Hyun; Meng, Qinglin; Shi, Shundi; Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue

CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Proceedings of the National Academy of Sciences of the United States of America (2005), 102(17), 5926-5931
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English
AB We report four-color DNA sequencing by synthesis (SBS) on a chip, using four photocleavable fluorescent nucleotide analogs (dGTP-PC-Bodipy-FL-510, dUTP-PC-R6G, dATP-PC-ROX, and dCTP-PC-Bodipy-650) (PC, photocleavable; Bodipy, 4,4-difluoro-4-bora-3α,4α-diaza-s-indacene; ROX, 6-carboxy-X-rhodamine; R6G, 6-carboxyrhodamine-6G). Each nucleotide analog consists of a different fluorophore attached to the 5 position of the pyrimidines and the 7 position of the purines through a photocleavable 2-nitrobenzyl linker. After verifying that these nucleotides could be successfully incorporated into a growing DNA strand in a solution-phase polymerase reaction and the fluorophore could be cleaved using laser irradiation (≈355 nm) in 10 s, we then performed an SBS reaction on a chip that contains a self-priming DNA template covalently immobilized by using 1,3-dipolar azide-alkyne cycloaddn. The DNA template was produced by PCR, using an azido-labeled primer, and the self-priming moiety was attached to the immobilized DNA template by enzymic ligation. Each cycle of SBS consists of the incorporation of the photocleavable fluorescent nucleotide into the DNA, detection of the fluorescent signal, and photocleavage of the fluorophore. The entire process was repeated to identify 12 continuous bases in the DNA template. These results demonstrate that photocleavable fluorescent nucleotide analogs can be incorporated accurately into a growing DNA strand during a polymerase reaction in solution and on a chip. Moreover, all four fluorophores can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing continuous identification of the DNA template sequence. Optimization of the steps involved in this SBS approach will further increase the read-length.
IT 857285-10-0
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(dATP-PC-ROX; four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides)
RN 857285-10-0 CAPLUS
CN 1H,5H,11H,15H-Xantheno[2,3,4-ij:5,6,7-i'j']diquinolizin-18-ium, 9-[5-[[[[3-[1-[[[[3-[4-amino-7-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-7H-pyrrolo[2,3-d]pyrimidin-5-yl]-2-propynyl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]-2-carboxyphenyl]-2,3,6,7,12,13,16,17-octahydro-, inner salt (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



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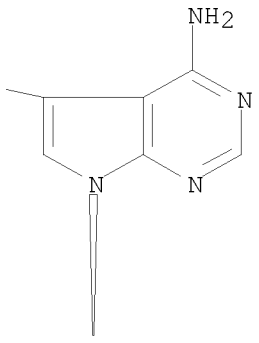

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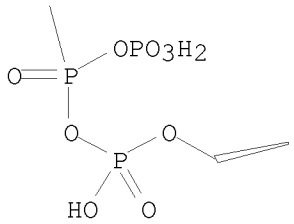

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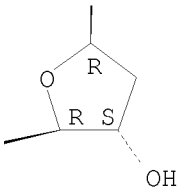

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L12 HAS NO ANSWERS
L12             STR

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structure-building or screen commands and text search terms.  L#s
created via the STRUCTURE or SCREEN commands must be searched in the
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answer sets from structure searches can be used in crossover searches
and can be combined with text terms.

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FULL SCREEN SEARCH COMPLETED -       52 TO ITERATE

100.0% PROCESSED       52 ITERATIONS                              13 ANSWERS
SEARCH TIME: 00.00.01

L13          13 SEA SSS FUL L12

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CA SUBSCRIBER PRICE                                       0.00      -6.56

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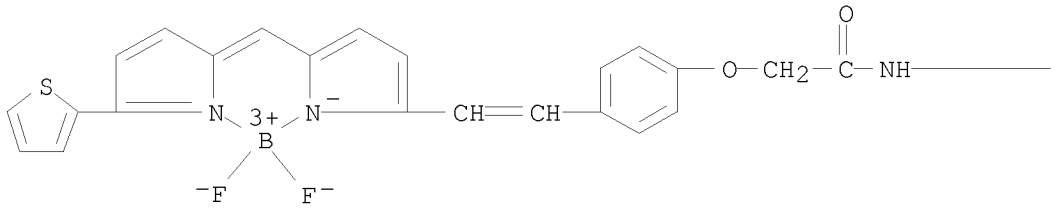
L15 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2008:291881 CAPLUS
DN 149:1872
TI An integrated system for DNA sequencing by synthesis
AU Edwards, John R.; Kim, Dae Hyun; Ju, Jingyue
CS Columbia Genome Center, Russ Berrie Medical Science Pavilion, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Perspectives in Bioanalysis (2007), 2(New High Throughput Technologies for DNA Sequencing and Genomics), 187-205
CODEN: PBEIBF; ISSN: 1871-0069
PB Elsevier B.V.
DT Journal; General Review
LA English
AB A review. The completion of the Human Genome Project has increased the need for high-throughput DNA sequencing technologies aimed at uncovering the genomic contributions to diseases. The DNA sequencing by synthesis (SBS) approach has shown great promise as a new platform for deciphering the genome. Recently, much progress has been made on the fundamental sciences required to make SBS a viable sequencing technol. One of the unique features of this approach is that many of the steps required are compatible in a modular fashion allowing for the best solution at each stage to be effectively integrated. Recent advances include emulsion-PCR based DNA template preparation, the design and synthesis of novel reporter nucleotides and new surface attachment chemistries for DNA template. The integration of these advances will lead to the development of a high-throughput DNA sequencing system in the near future.
IT 693811-10-8 1030027-58-7
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(integrated system for DNA sequencing by synthesis)
RN 693811-10-8 CAPLUS
CN Borate(4-), [2'-deoxy-5-[3-[[[1-[2-nitro-5-[[[1-oxo-6-[[[4-[2-[5-[[5-(2-thienyl)-2H-pyrrol-2-ylidene-κN]methyl]-1H-pyrrol-2-yl-κN]ethenyl]phenoxy]acetyl]amino]hexyl]amino]methyl]phenyl]ethoxy]carbonyl]amino]-1-propenyl]cytidine 5'-(triphosphato)(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

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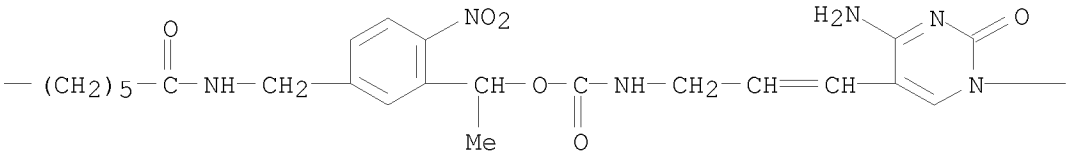

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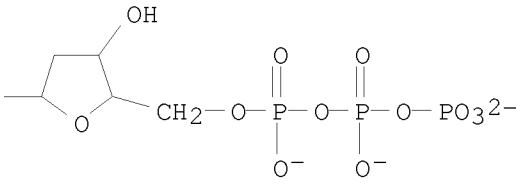
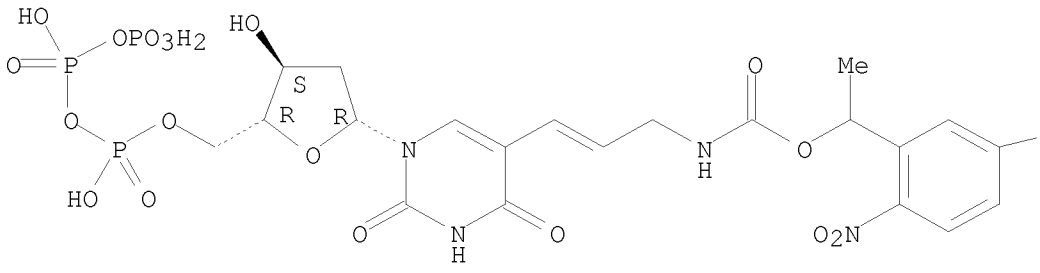
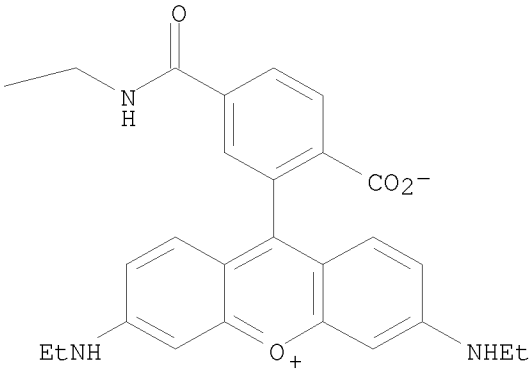


RN 1030027-58-7 CAPLUS
CN Xanthylium, 9-[2-carboxy-5-[[[[3-[1-[[[[3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2-dihydro-2,4-dioxo-5-pyrimidinyl]-2-propen-1-yl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]phenyl]-3,6-bis(ethylamino)- (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A





RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:1001865 CAPLUS
DN 143:300254
TI Photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddition chemistry
IN Ju, Jingyue
PA The Trustees of Columbia University In the City of New York, USA
SO PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005084367	A2	20050915	WO 2005-US6960	20050303
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	CA 2557818	A1	20050915	CA 2005-2557818	20050303
	EP 1730307	A2	20061213	EP 2005-724495	20050303
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	US 20070275387	A1	20071129	US 2007-591520	20070604
PRAI	US 2004-550007P	P	20040303		
	WO 2005-US6960	W	20050303		

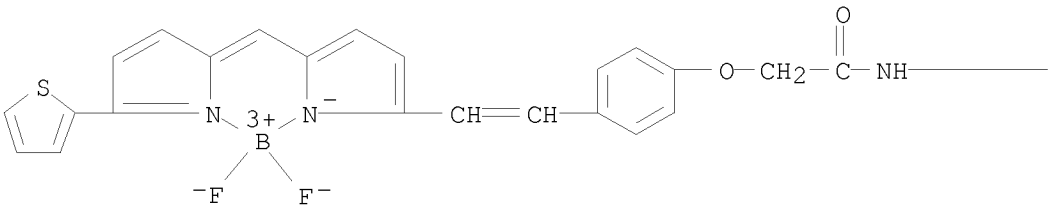
AB This invention provides a method for determining the sequence of a DNA or an RNA, wherein (i) about 1000 or fewer copies of the DNA or RNA are bound to

a solid substrate via 1,3-dipolar azide-alkyne cycloaddn. chemical and (ii) each copy of the DNA or RNA comprises a self-priming moiety. The bound nucleic acid is contacted with a DNA or RNA polymerase and 4 photocleavable fluorescent nucleotide analogs under conditions permitting nucleic acid synthesis. The identity of the incorporated nucleotide is determined, each of the nucleotide analogs having a different fluorescent wavelength from the other three.

IT 693811-10-8 857285-09-7
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(photocleavable fluorescent nucleotides for nucleic acid sequencing on chips constructed by 1,3-dipolar azide-alkyne cycloaddn. chemical)

RN 693811-10-8 CAPLUS
CN Borate(4-), [2'-deoxy-5-[3-[[[1-[2-nitro-5-[[[1-oxo-6-[[[4-[2-[5-[[5-(2-thienyl)-2H-pyrrol-2-ylidene-κN]methyl]-1H-pyrrol-2-yl-κN]ethenyl]phenoxy]acetyl]amino]hexyl]amino]methyl]phenyl]ethoxy]carbonyl]amino]-1-propenyl]cytidine 5'-(triphosphato)(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

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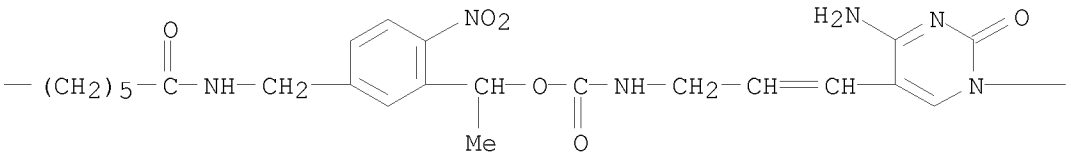

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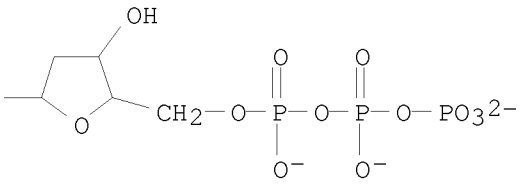

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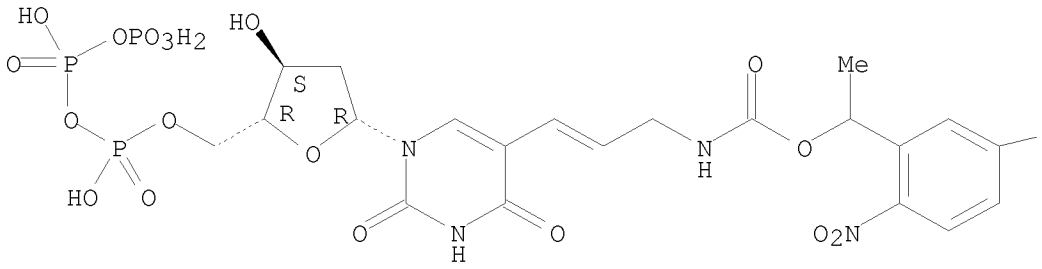
pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propen-1-yl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]phenyl]-3,6-bis(ethylamino)-2,7-dimethyl-, inner salt (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



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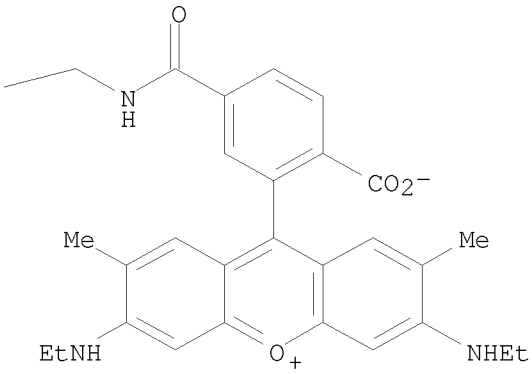

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L15 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:424578 CAPLUS
DN 143:110290
TI Four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides
AU Seo, Tae Seok; Bai, Xiaopeng; Kim, Dae Hyun; Meng, Qinglin; Shi, Shundi; Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue
CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Proceedings of the National Academy of Sciences of the United States of America (2005), 102(17), 5926-5931
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English
AB We report four-color DNA sequencing by synthesis (SBS) on a chip, using four photocleavable fluorescent nucleotide analogs (dGTP-PC-Bodipy-FL-510,

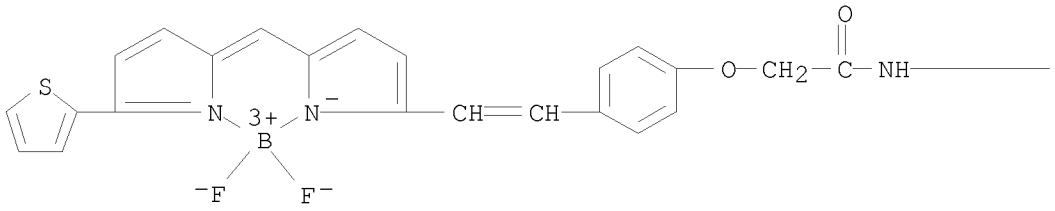
dUTP-PC-R6G, dATP-PC-ROX, and dCTP-PC-Bodipy-650) (PC, photocleavable; Bodipy, 4,4-difluoro-4-bora-3α,4α-diaza-s-indacene; ROX, 6-carboxy-X-rhodamine; R6G, 6-carboxyrhodamine-6G). Each nucleotide analog consists of a different fluorophore attached to the 5 position of the pyrimidines and the 7 position of the purines through a photocleavable 2-nitrobenzyl linker. After verifying that these nucleotides could be successfully incorporated into a growing DNA strand in a solution-phase polymerase reaction and the fluorophore could be cleaved using laser irradiation (≈355 nm) in 10 s, we then performed an SBS reaction on a chip that contains a self-priming DNA template covalently immobilized by using 1,3-dipolar azide-alkyne cycloaddn. The DNA template was produced by PCR, using an azido-labeled primer, and the self-priming moiety was attached to the immobilized DNA template by enzymic ligation. Each cycle of SBS consists of the incorporation of the photocleavable fluorescent nucleotide into the DNA, detection of the fluorescent signal, and photocleavage of the fluorophore. The entire process was repeated to identify 12 continuous bases in the DNA template. These results demonstrate that photocleavable fluorescent nucleotide analogs can be incorporated accurately into a growing DNA strand during a polymerase reaction in solution and on a chip. Moreover, all four fluorophores can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing continuous identification of the DNA template sequence. Optimization of the steps involved in this SBS approach will further increase the read-length.

IT 693811-10-8
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(dCTP-PC-Bodipy-650; four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides)

RN 693811-10-8 CAPLUS

CN Borate(4-), [2'-deoxy-5-[3-[[[1-[2-nitro-5-[[[1-oxo-6-[[[4-[2-[5-[[5-(2-thienyl)-2H-pyrrol-2-ylidene-κN]methyl]-1H-pyrrol-2-yl-κN]ethenyl]phenoxy]acetyl]amino]hexyl]amino]methyl]phenyl]ethoxy]carbonyl]amino]-1-propenyl]cytidine 5'-(triphosphato)(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

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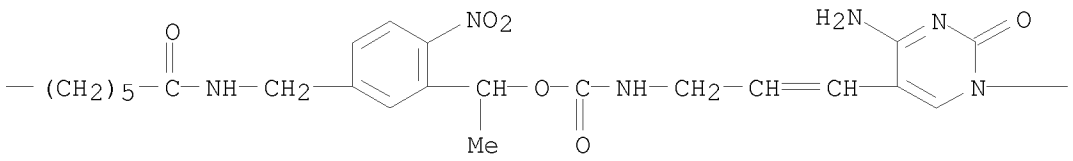

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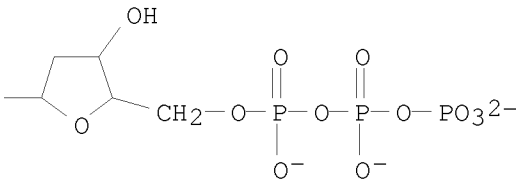
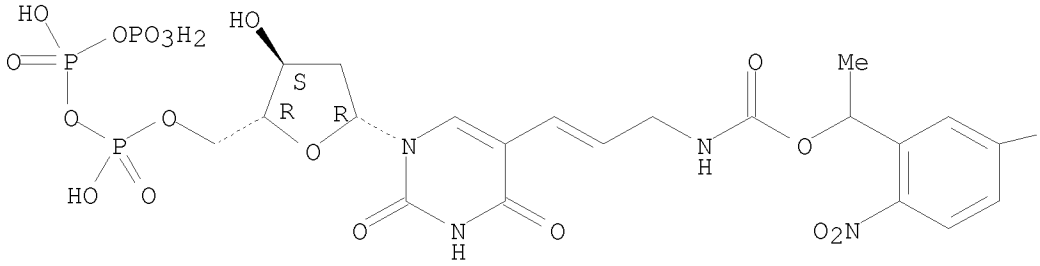


IT 857285-09-7
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(dUTP-PC-R6G; four-color DNA sequencing by synthesis on a chip using photocleavable fluorescent nucleotides)
RN 857285-09-7 CAPLUS
CN Xanthylium, 9-[2-carboxy-5-[[[[3-[1-[[[[3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propen-1-yl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]phenyl]-3,6-bis(ethylamino)-2,7-dimethyl-, inner salt (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



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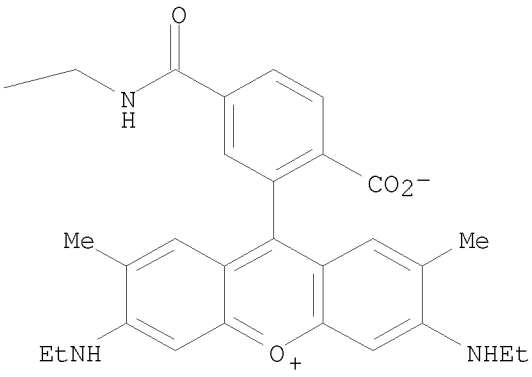
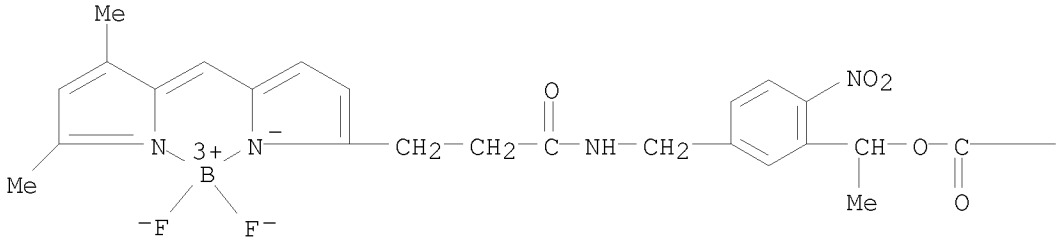


RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

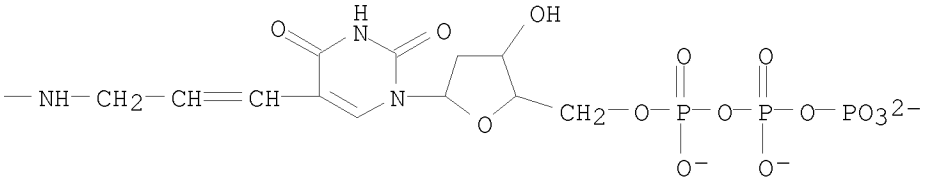
L15 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2004:342380 CAPLUS
DN 141:1983
TI Photocleavable fluorescent nucleotides for DNA sequencing on a chip constructed by site-specific coupling chemistry
AU Seo, Tae Seok; Bai, Xiaopeng; Ruparel, Hameer; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue
CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Proceedings of the National Academy of Sciences of the United States of America (2004), 101(15), 5488-5493
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English
AB DNA sequencing by synthesis on a solid surface offers new paradigms to overcome limitations of electrophoresis-based sequencing methods. Here we report DNA sequencing by synthesis using photocleavable (PC) fluorescent nucleotides [dUTP-PC-4,4-difluoro-4-bora-3α,4α-diaza-s-indacene (Bodipy)-FL-510, dCTP-PC-Bodipy-650, and dUTP-PC-6-carboxy-X-rhodamine (ROX)] on a glass chip constructed by 1,3-dipolar azide-alkyne cycloaddn. coupling chemical Each nucleotide analog consists of a different fluorophore attached to the base through a PC 2-nitrobenzyl linker. We constructed a DNA microarray by using the 1,3-dipolar cycloaddn. chemical to site-specifically attach azido-modified DNA onto an alkyne-functionalized glass chip at room temperature under aqueous conditions. After verifying that the polymerase reaction could be carried out successfully on the above-described DNA array, we then performed a sequencing reaction on the chip by using a self-primed DNA template. In the first step, we extended the primer using DNA polymerase and dUTP-PC-Bodipy-FL-510, detected the fluorescent signal from the fluorophore Bodipy-FL-510, and then cleaved the fluorophore using 340 nm UV irradiation This process was followed by extension of the primer with dCTP-PC-Bodipy-650 and the subsequent detection of the fluorescent signal from Bodipy-650 and its photocleavage. The same procedure was also performed by using dUTP-PC-ROX. The entire process was repeated five times by using the three fluorescent nucleotides to identify 7 bases in the DNA template. These results demonstrate that the PC nucleotide analogs can be incorporated accurately into a growing DNA strand during polymerase reaction on a chip, and the fluorophore can be detected and then efficiently cleaved using near-UV irradiation, thereby allowing the continuous identification of the template sequence.
IT 506431-10-3P 693777-86-5P 693811-10-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(photocleavable fluorescent nucleotides for DNA sequencing on chip constructed by site-specific coupling chemical)
RN 506431-10-3 CAPLUS
CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

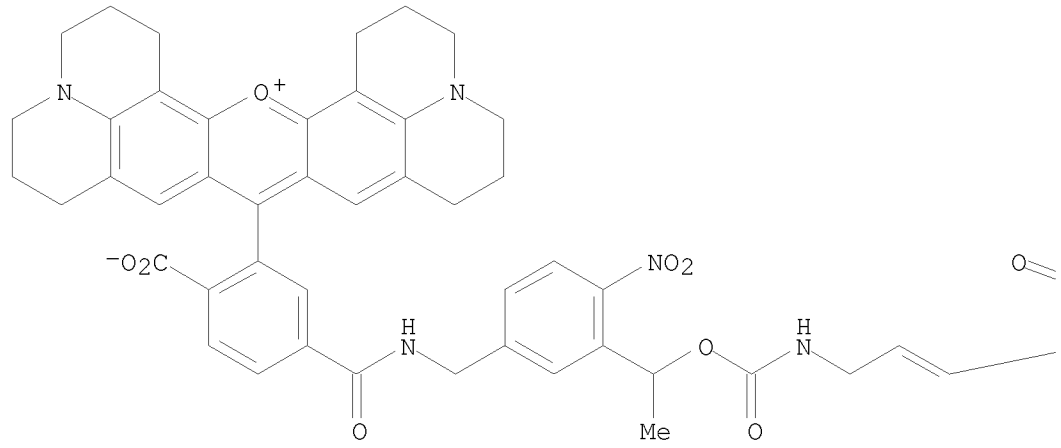
PAGE 1-B



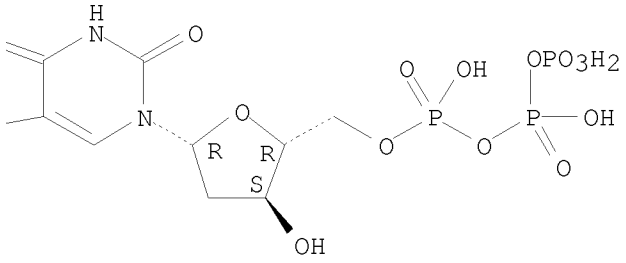
RN 693777-86-5 CAPLUS
CN 1H,5H,11H,15H-Xantheno[2,3,4-ij:5,6,7-i'j']diquinolizin-18-ium, 9-[2-carboxy-5-[[[[3-[1-[[[[3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]carbonyl]phenyl]-2,3,6,7,12,13,16,17-octahydro-, inner salt (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A

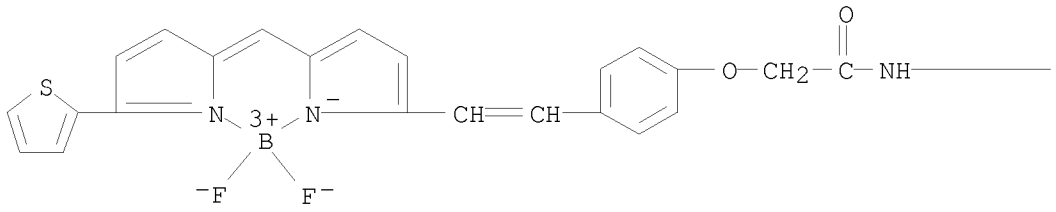


PAGE 1-B



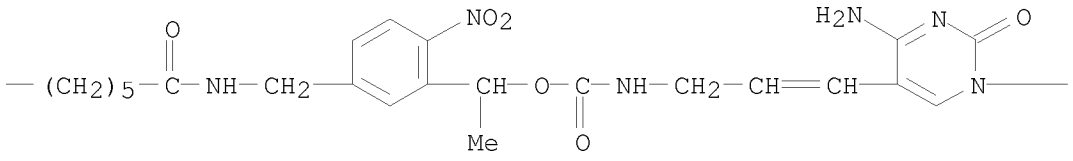
RN 693811-10-8 CAPLUS
CN Borate(4-), [2'-deoxy-5-[3-[[[1-[2-nitro-5-[[[1-oxo-6-[[[4-[2-[5-[[5-(2-thienyl)-2H-pyrrol-2-ylidene-κN]methyl]-1H-pyrrol-2-yl-κN]ethenyl]phenoxy]acetyl]amino]hexyl]amino]methyl]phenyl]ethoxy]carbonyl]amino]-1-propenyl]cytidine 5'-(triphosphato)(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

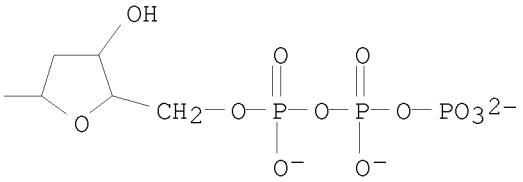
PAGE 1-A



● 4 H^+

PAGE 1-B



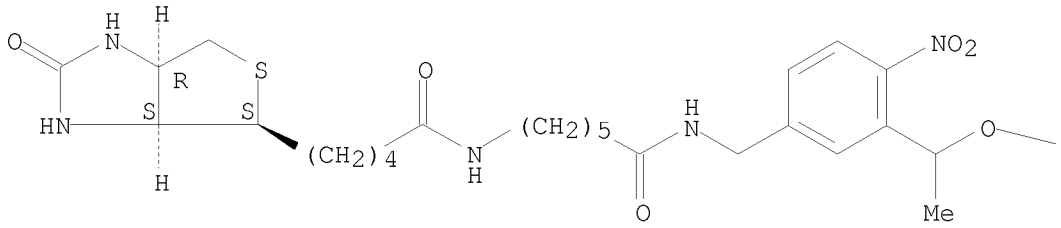


RE.CNT 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2004:106802 CAPLUS
DN 140:315786
TI Design and synthesis of a photocleavable biotinylated nucleotide for DNA analysis by mass spectrometry
AU Bai, Xiaopeng; Kim, Sobin; Li, Zengmin; Turro, Nicholas J.; Ju, Jingyue
CS Columbia Genome Center, Laboratory of DNA Sequencing and Chemical Biology, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA
SO Nucleic Acids Research (2004), 32(2), 535-541
CODEN: NARHAD; ISSN: 0305-1048
PB Oxford University Press
DT Journal
LA English
AB We report here the design, synthesis and evaluation of a novel photocleavable (PC) biotinylated nucleotide analog, dUTP-PC-Biotin, for DNA polymerase extension reaction to isolate DNA products for mass spectrometry (MS) anal. This nucleotide analog has a biotin moiety attached to the 5-position of 2'-deoxyribouridine 5'-triphosphate via a photocleavable 2-nitrobenzyl linker. We have demonstrated that dUTP-PC-Biotin can be faithfully incorporated by the DNA polymerase Thermo Sequenase into the growing DNA strand in a DNA polymerase extension reaction and that its incorporation does not hinder the addition of the subsequent nucleotide. Therefore, the DNA extension fragments generated by using the dUTP-PC-Biotin can be efficiently isolated by a streptavidin-coated surface and recovered by near-UV light irradiation at room temperature in mild condition for further anal. without using any chems. or heat. Single and multiple primer extension reactions were performed using the dUTP-PC-Biotin to generate DNA products for MALDI-TOF MS anal. Such nucleotide analogs that carry a biotin and a photocleavable linker will allow the isolation and purification of DNA products under mild conditions for MS-based genetic anal. by DNA sequencing or multiplex single nucleotide polymorphism (SNP) detection. Furthermore, these nucleotide analogs should also be useful in isolating DNA-protein complexes under non-denaturing conditions.
IT 250610-63-0P
RL: BUU (Biological use, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(synthesis of photocleavable biotinylated nucleotide for DNA anal. by mass spectrometry)
RN 250610-63-0 CAPLUS
CN Carbamic acid, [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]-, C-[1-[5-[[[6-[[5-[(3aS,4S,6aR)-hexahydro-2-oxo-1H-thieno[3,4-d]imidazol-4-yl]-1-oxopentyl]amino]-1-oxohexyl]amino]methyl]-2-nitrophenyl]ethyl] ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



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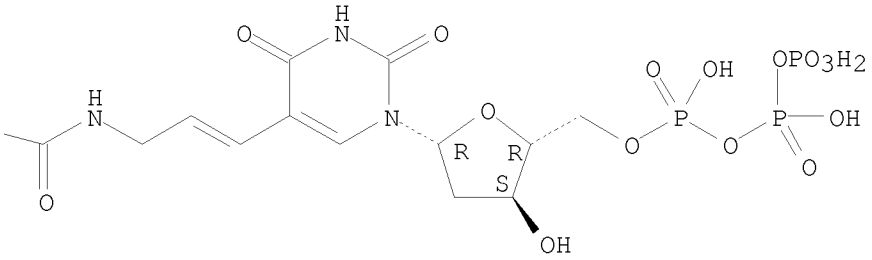

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2003:58225 CAPLUS
DN 138:118427
TI Nucleotides conjugated to markers via photocleavage linkage and their use for labeling nucleic acids
IN Olejnik, Jerzy; Krzymanska-Olejnik, Edyta; Rothschild, Kenneth J.
PA Ambergen, Inc., USA
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

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PI	WO 2003006625	A2	20030123	WO 2002-US22369	20020712
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	AU 2002354577	A1	20030129	AU 2002-354577	20020712
	AU 2002354577	B2	20070208		
	US 20030099972	A1	20030529	US 2002-193781	20020712

	US 7057031	B2	20060606		
	EP 1415001	A2	20040506	EP 2002-784906	20020712
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	US 20060252923	A1	20061109	US 2006-351996	20060209
	US 7547530	B2	20090616		
PRAI	US 2001-305490P	P	20010713		
	US 2002-193781	A	20020712		
	WO 2002-US22369	W	20020712		

OS MARPAT 138:118427

AB Photocleavable nucleotide-marker conjugates and their use in nucleic acid labeling is disclosed. Thus, the synthesis of dUTP linked via a 5-aminomethyl-α-methyl-2-nitrobenzyl alc. photocleavable linkage to BODIPY-FL or to Cy5 is described. These dUTP derivs. were used to label an oligonucleotide using terminal deoxynucleotidyl transferase.

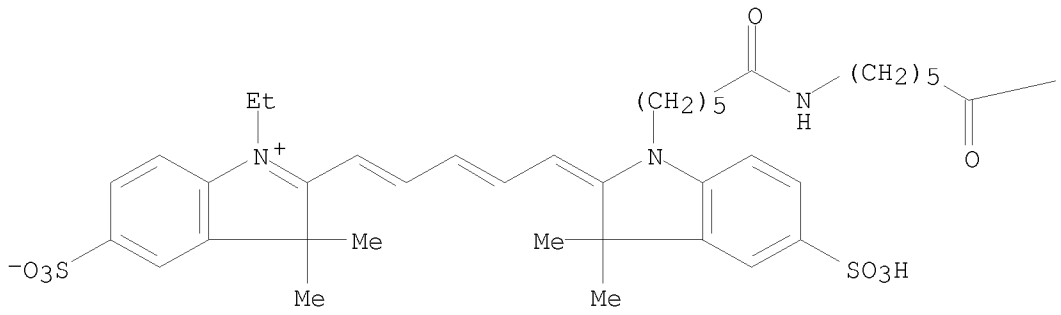
IT 488140-94-9P 488855-29-4P
RL: BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(nucleotides conjugated to markers via photocleavage linkage and their use for labeling nucleic acids)

RN 488140-94-9 CAPLUS

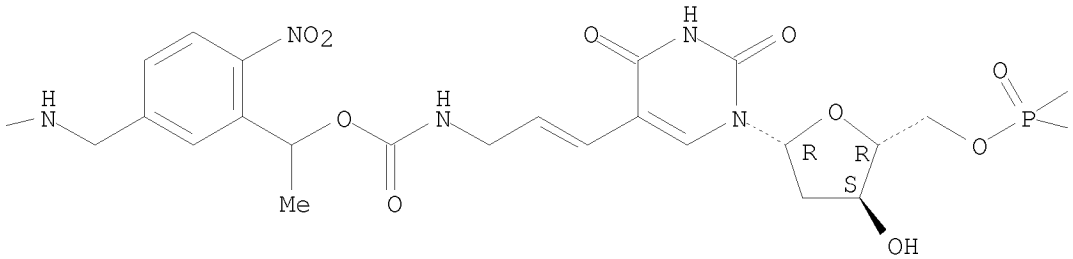
CN 3H-Indolium, 2-[5-[1-[6-[[6-[[[3-[1-[[[[3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propen-1-yl]amino]carbonyl]oxy]ethyl]-4-nitrophenyl]methyl]amino]-6-oxohexyl]amino]-6-oxohexyl]-1,3-dihydro-3,3-dimethyl-5-sulfo-2H-indol-2-ylidene]-1,3-pentadien-1-yl]-1-ethyl-3,3-dimethyl-5-sulfo-, inner salt (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

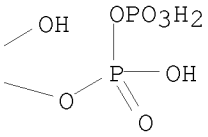
PAGE 1-A



PAGE 1-B

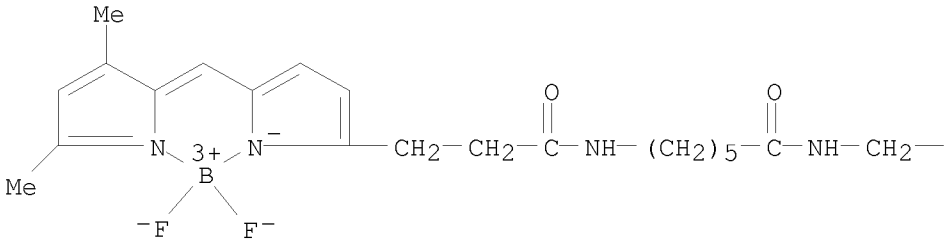


PAGE 1-C



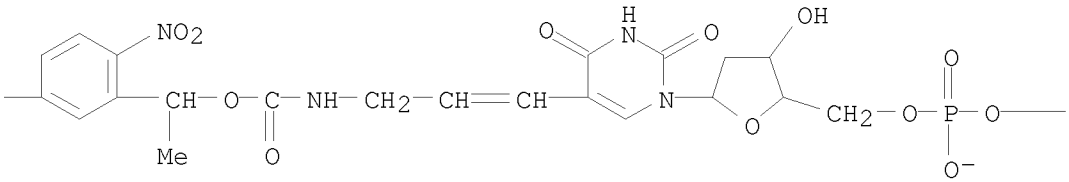
RN 488855-29-4 CAPLUS
CN Borate(4-), [1-[5-[[[6-[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]-1-oxohexyl]amino]methyl]-2-nitrophenyl]ethyl [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+

PAGE 1-B



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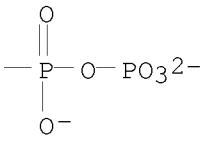
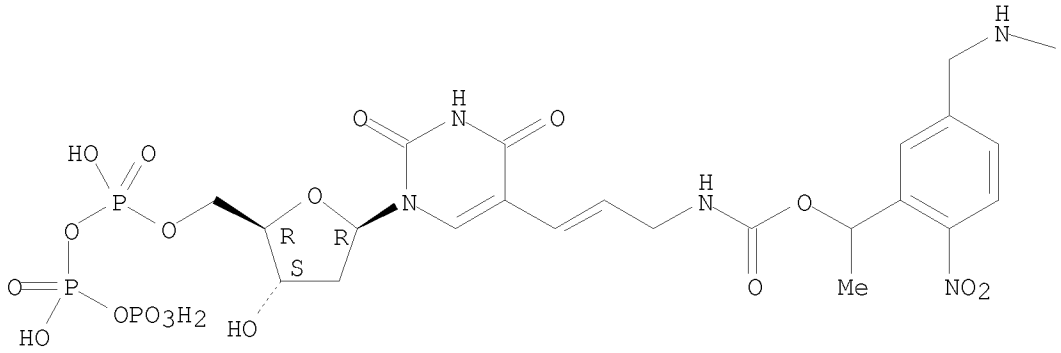


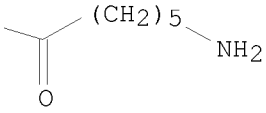
IT 488140-91-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(nucleotides conjugated to markers via photocleavage linkage and their use for labeling nucleic acids)
RN 488140-91-6 CAPLUS
CN Carbamic acid, [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]-, C-[1-[5-[[(6-amino-1-oxohexyl)amino]methyl]-2-nitrophenyl]ethyl] ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



PAGE 1-B



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 2003:78620 CAPLUS
DN 138:281797
TI A photocleavable fluorescent nucleotide for DNA sequencing and analysis
AU Li, Zengmin; Bai, Xiaopeng; Ruparel, Hameer; Kim, Sobin; Turro, Nicholas J.; Ju, Jingyue

CS Columbia Genome Center, Columbia University College of Physicians and Surgeons, New York, NY, 10032, USA

SO Proceedings of the National Academy of Sciences of the United States of America (2003), 100(2), 414-419
CODEN: PNASA6; ISSN: 0027-8424
PB National Academy of Sciences
DT Journal
LA English

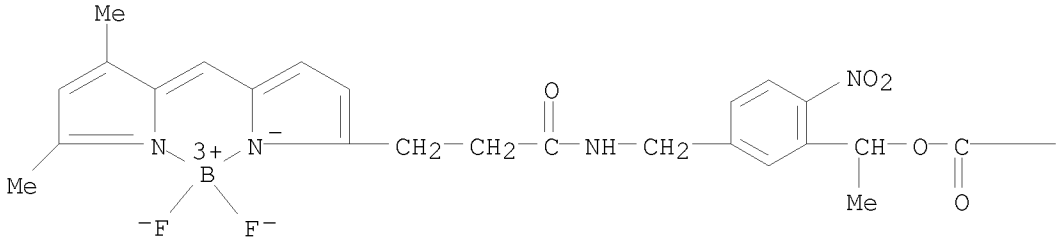
AB DNA sequencing by synthesis during a polymerase reaction using laser-induced fluorescence detection is an approach that has a great potential to increase the throughput and data quality of DNA sequencing. We report the design and synthesis of a photocleavable fluorescent nucleoside triphosphate, one of the essential mols. required for the sequencing-by-synthesis approach. We synthesized this nucleoside triphosphate by attaching a fluorophore, 4,4-difluoro-5,7-dimethyl-4-bora-3α,4α-diaza-s-indacene propionic acid (BODIPY), to the 5 position of 2'-deoxyuridine triphosphate via a photocleavable 2-nitrobenzyl linker. We demonstrate that the nucleotide analog can be faithfully incorporated by a DNA polymerase Thermo Sequenase into the growing DNA strand in a DNA-sequencing reaction and that its incorporation does not hinder the addition of the subsequent nucleotide. These results indicate that the nucleotide analog is an excellent substrate for Thermo Sequenase. We also systematically studied the photocleavage of the fluorescent dye from a DNA mol. that contained the nucleotide analog. UV irradiation at 340 nm of the DNA mol. led to the efficient release of the fluorescent dye, ensuring that a previous fluorescence signal did not leave any residue that could interfere with the detection of the next nucleotide. Thus, our results indicate that it should be feasible to use four different fluorescent dyes with distinct fluorescence emissions as unique tags to label the four nucleotides (A, C, G, and T) through the photocleavable 2-nitrobenzyl linker. These fluorescent tags can be removed easily by photocleavage after the identification of each nucleotide in the DNA sequencing-by-synthesis approach.

IT 506431-10-3
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(photocleavable fluorescent nucleotide for DNA sequencing and anal.)

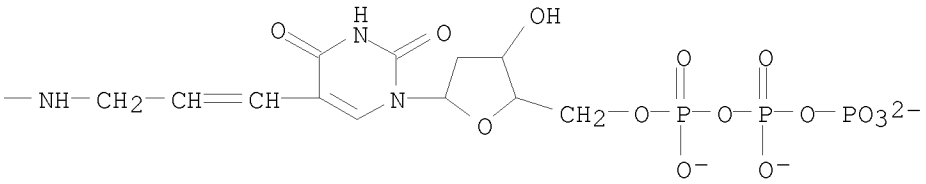
RN 506431-10-3 CAPLUS

CN Borate(4-), [1-[5-[[[3-[5-[(3,5-dimethyl-2H-pyrrol-2-ylidene-κN)methyl]-1H-pyrrol-2-yl-κN]-1-oxopropyl]amino]methyl]-2-nitrophenyl]ethyl [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]carbamato(5-)]difluoro-, tetrahydrogen, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



● 4 H^+



RE.CNT 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2009 ACS on STN
AN 1999:733056 CAPLUS
DN 131:348787
TI Photocleavable agents and conjugates having detectable moieties and photoreactive moieties for the detection and isolation of biomolecules
IN Rothschild, Kenneth J.; Sonar, Sanjay M.; Olejnik, Jerzy
PA Trustees of Boston University, USA
SO U.S., 65 pp., Cont.-in-part of U.S. Ser. No. 240,511.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

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PI	US 5986076	A	19991116	US 1994-345807	19941122
	US 5643722	A	19970701	US 1994-240511	19940511
	CA 2189848	A1	19951123	CA 1995-2189848	19950511
	WO 9531429	A1	19951123	WO 1995-US5555	19950511
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	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
	AU 9526359	A	19951205	AU 1995-26359	19950511
	JP 10500409	T	19980113	JP 1995-529698	19950511
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	EP 1415995	A3	20040512		
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	US 5922858	A	19990713	US 1997-884325	19970627
	US 5948624	A	19990907	US 1997-978897	19971126
	US 6210941	B1	20010403	US 1999-290325	19990412
	US 6344320	B1	20020205	US 1999-307579	19990507
	US 6596481	B1	20030722	US 1999-335018	19990617
	US 6589736	B1	20030708	US 2000-504001	20000214
	US 6358689	B1	20020319	US 2000-583243	20000531
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	US 20030190680	A1	20031009	US 2002-264336	20021003
	US 20040053217	A1	20040318	US 2003-396960	20030325
	US 7195874	B2	20070327		

	US 20040033514	A1	20040219	US 2003-401251	20030327
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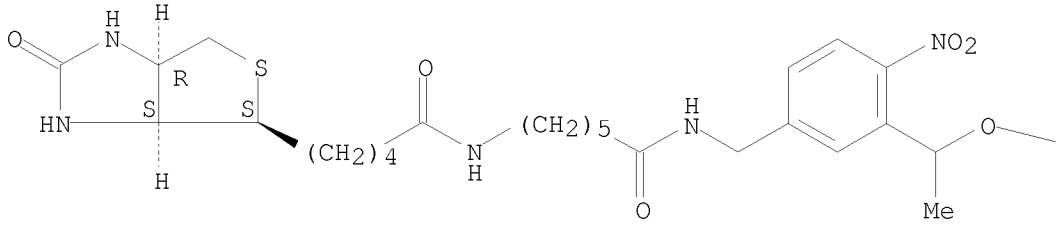
OS MARPAT 131:348787

AB This invention relates to agents and conjugates that can be used to detect and isolate target components from complex mixts. such as nucleic acids from biol. samples, cells from bodily fluids, and nascent proteins from translation reactions. Agents comprise a detectable moiety bound to a photoreactive moiety. Conjugates comprise agents coupled to substrates by covalent bonds which can be selectively cleaved with the administration of electromagnetic radiation. Target substances labeled with detectable mols. can be easily identified and separated from a heterologous mixture of substances. Exposure of the conjugate to radiation releases the target in a functional form and completely unaltered. Using photocleavable mol. precursors as the conjugates, label can be incorporated into macromols., the nascent macromols. isolated and the label completely removed. The invention also relates to targets isolated with these conjugates which may be useful as pharmaceutical agents or compns. that can be administered to humans and other mammals. Useful compns. include biol. agents such as nucleic acids, proteins, lipids and cytokines. Conjugates can also be used to monitor the pathway and half-life of pharmaceutical composition in vivo and for diagnostic, therapeutic and prophylactic purposes. The invention also relates to kits comprised of agents and conjugates that can be used for the detection of diseases, disorders and nearly any individual substance in a complex background of substances. Photocleavable biotin compds. were prepared and incorporated into proteins, DNA, and nucleic acid probes.

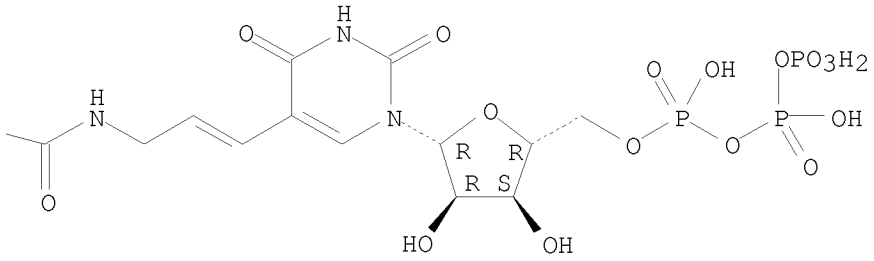
IT 250610-67-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in preparation of photocleavable biotin labeled RNA; photocleavable agents and conjugates having detectable moieties and photoreactive moieties for detection and isolation of biomols.)
RN 250610-67-4 CAPLUS
CN Carbamic acid, [3-[1,2,3,4-tetrahydro-1-[5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-ribofuranosyl]-2,4-dioxo-5-pyrimidinyl]-2-propenyl]-, C-[1-[5-[[[6-[[5-[(3aS,4S,6aR)-hexahydro-2-oxo-1H-thieno[3,4-d]imidazol-4-yl]-1-oxopentyl]amino]-1-oxohexyl]amino]methyl]-2-nitrophenyl]ethyl] ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



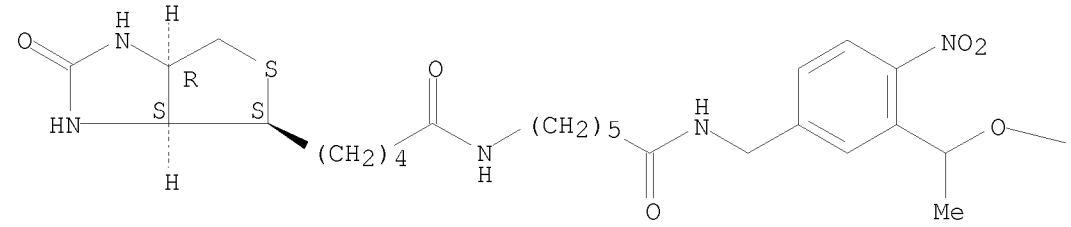
PAGE 1-B



IT 250610-63-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(photocleavable agents and conjugates having detectable moieties and photoreactive moieties for detection and isolation of biomols.)
RN 250610-63-0 CAPLUS
CN Carbamic acid, [3-[1-[2-deoxy-5-O-[hydroxy[[hydroxy(phosphonooxy)phosphinyl]oxy]phosphinyl]-β-D-erythro-pentofuranosyl]-1,2,3,4-tetrahydro-2,4-dioxo-5-pyrimidinyl]-2-propenyl]-, C-[1-[5-[[[6-[[5-[(3aS,4S,6aR)-hexahydro-2-oxo-1H-thieno[3,4-d]imidazol-4-yl]-1-oxopentyl]amino]-1-oxohexyl]amino]methyl]-2-nitrophenyl]ethyl] ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.

PAGE 1-A



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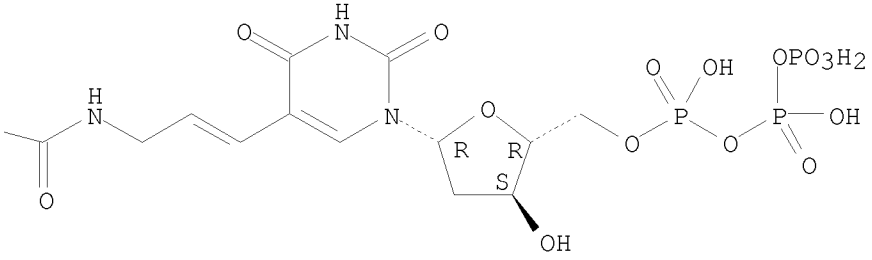

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ALL CITATIONS AVAILABLE IN THE RE FORMAT

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